



News Release

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Drought Conditions Lead to 10 Record Low Monthly Groundwater Levels in July

Current groundwater levels in Maryland and Delaware are lower in most wells than during the droughts of 1999 and the 1960s. Low groundwater and streamflow levels continue to reflect the long-term effects of hydrologic drought. Groundwater levels were below normal at the end of July at all of the 17 wells used for drought analysis in Maryland and Delaware, according to hydrologists at the U.S. Geological Survey (USGS). Ten of these wells set record low groundwater levels for July (see graphs and a record comparison table at <http://md.water.usgs.gov/groundwater/>).

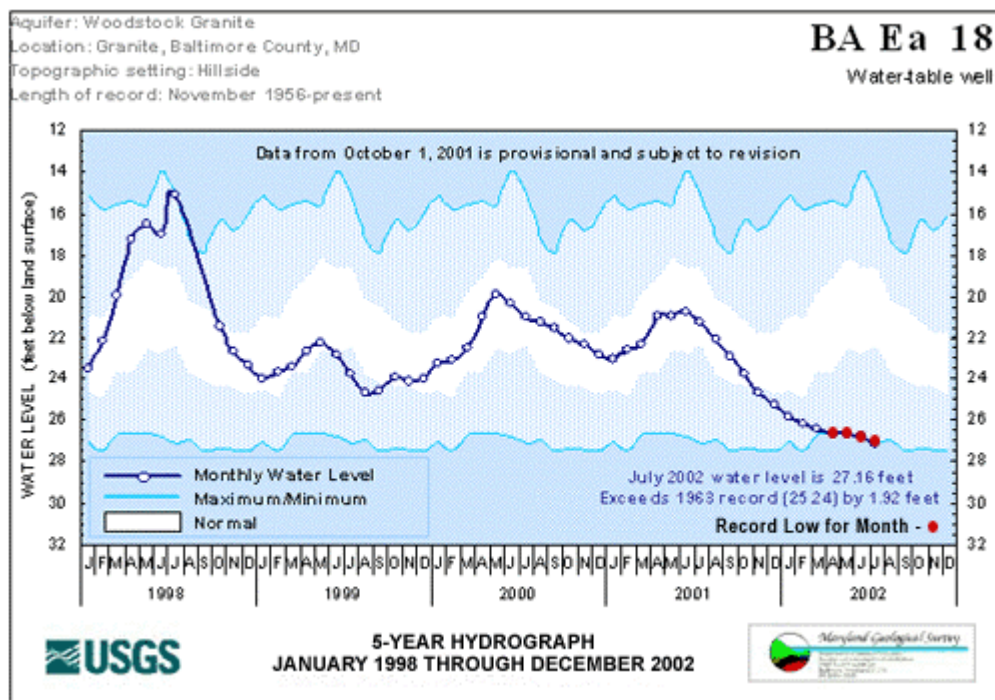


For news release and images, go to http://md.water.usgs.gov/publications/press_release/2002/current/

At the end of July, record low 7-day streamflows were set at three real-time streamflow stations used to monitor drought in Maryland and Delaware. Real-time streamflow is monitored by the USGS across the Nation and can be viewed at: <http://waterdata.usgs.gov/>. Streamflow in western Maryland was above normal at the end of July because of rainfall at the end of the month. During droughts, streamflow typically declines to levels experienced before rainfall within a few days.

The USGS drought monitoring well with the largest deficit from normal is in Carroll County, Maryland. The groundwater level at this well is 8.20 feet below normal for July, surpassing the previous July record set in 1995 by 3.04 feet. The monitoring well in Harford County, Maryland, is 7.81 feet below normal for July, and has exceeded the previous record low set in July 1965 by 3.59 feet.

In Baltimore County, Maryland, the USGS real-time well is 6.11 feet below normal and has broken the previous record by 1.92 feet. This well is equipped with instruments to record water-level data at 15-60 minute intervals and transmits the data via satellite to USGS offices every 1 to 4 hours, which can be viewed within minutes of arrival at http://waterdata.usgs.gov/md/nwis/uv/?site_no=392045076512501. The 5-year hydrograph below shows the groundwater level dropping since last summer, indicating that spring and summer rainfall has not recharged the groundwater aquifer.



A recent addition to the USGS website is a clickable groundwater map for the metropolitan Washington, D.C. area: http://md.water.usgs.gov/groundwater/web_wells/current/water_table/counties/cog/. The website features 17 observation wells measured monthly and plotted in comparison to normal groundwater levels.

Record low 7-day streamflow was observed at Deer Creek and Winters Run in Harford County, Maryland, and Brandywine Creek in New Castle County, Delaware. Average streamflow at Deer Creek in Harford County, Maryland, was the lowest monthly July flow for the period of record at 84 percent below normal. Streamflow at Deer Creek has been below normal for 14 of the last 15 months and set daily low streamflow records for 29 out of the 31 days in July. This is the sixth consecutive month with record-setting monthly low streamflow for Deer Creek. In the Potomac River Basin, the Monocacy River has also been particularly hard hit, breaking daily records for 15 of the 31 days in July.

Total flow into the Chesapeake Bay during July averaged 13.6 bgd (billion gallons per day), which is 45 percent below average. Streamflow in the Susquehanna River decreased in July, contributing 52 percent of the total flow into the Chesapeake Bay. Streamflow in the Potomac River averaged 1.4 bgd, which is 56 percent below normal for this time of year. The lowest Potomac River flow was on July 13 at 0.7 bgd (see graphs at <http://md.water.usgs.gov/monthly/poto.html>). Streamflow on the James and Potomac Rivers increased in July, but remained below normal. The James River contributed 10 percent of the flow to the Bay, while the Potomac River contributed 15 percent (see graphs at <http://md.water.usgs.gov/monthly/bay.html>).

July rainfall varied widely across the bi-state area, and temperatures were above average throughout the area. Western Maryland experienced above-normal precipitation, while most of the rest of Maryland and Delaware generally received below-normal precipitation. Rainfall at Baltimore-Washington International (BWI) Airport was 1.47 inches below normal, and rainfall at Reagan Washington National Airport was reported at 1.6 inches below normal, according to the National Weather Service. Annual rainfall is more than 10 inches below normal in many counties across Maryland and Delaware.

Storage in the Baltimore reservoir system declined to 55 percent of capacity in July. The Baltimore region has been supplementing its water supply with water from the Susquehanna River since the end of January. Near month's end, the contents of the Triadelphia and Duckett Reservoirs were at 61 percent of capacity.

Rainfall from scattered thunderstorms may temporarily raise streamflow levels, but most of the rainfall in the summer is used by plants or evaporates, resulting in minimal recharge to groundwater aquifers. The rapid decline in streamflows after a rainfall event is explained by the low groundwater storage. Streamflows in the summer normally are maintained by groundwater storage, which typically is highest in early spring, yet have been at record lows for many months in central Maryland. Streamflow and groundwater levels reflect the long-term effects and severity of the hydrologic drought, and generally do not recover during the summer months.

Tracking streamflow and groundwater levels is essential to gauge drought severity and recovery. These USGS data have been provided to State and local water resource managers and are critical for making appropriate decisions on water restrictions. For more information on how the drought is affecting streamflow and groundwater levels in Maryland and Delaware, see Drought Watch at: <http://md.water.usgs.gov/drought/>. Please note that the streamflow and groundwater level data is provisional and subject to change.

The real-time streamflow stations used in this analysis are operated in cooperation with the Maryland and Delaware Geological Surveys, the Maryland State Highway Administration, the U.S. Army Corps of Engineers, the Maryland Department of Natural Resources, the Maryland Department of the Environment, and other agencies. The observation wells used in this analysis are operated in cooperation with the Maryland and Delaware Geological Surveys. The USGS publishes data for 128 streamflow stations and 379 wells across Maryland and Delaware.

The USGS is the Nation's largest water, earth and biological science, and civilian mapping agency providing reliable, impartial scientific information to resource managers, planners, and other customers. This information is gathered in every state by USGS scientists to minimize the loss of life and property from natural disasters, contribute to the sound conservation and the economic and physical development of the Nation's natural resources, and enhance the quality of life by monitoring water, biological, energy, and mineral resources.

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